Aalto University
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Spell it out!

Limited attention and equity crowdfunding success

Master's Thesis
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Abstract

The popularity of crowdfunding is increasing exponentially. The most novel form, equity crowdfunding, opens the high-risk start-up market for everyone. It is more loosely regulated than, e.g., a public listing, yet it attracts unsophisticated investors. This raises an important question of what are the investment criteria used in equity crowdfunding. In this thesis, I study the effect of limited investor attention on equity crowdfunding success by applying the framework of Hirshleifer and Teoh (2003). The framework models how merely the form of information – in addition to the content – can affect investors' perceptions, due to limited human attention.

The data sample covers 147 equity crowdfunding campaigns listed on Invesdor, a leading platform in the Nordics, since its foundation in 2012 until May 2017. Invesdor operates on an "all or nothing" model, in which companies set a minimum funding target for their campaign. If a company is unable to reach the target, the campaign is canceled, and investments are refunded. The main measure of campaign success is a dummy variable, which takes the value of one, if the target is reached, and zero otherwise.

My findings support the framework of Hirshleifer and Teoh (2003) and are in line with studies of limited investor attention in other fields, such as the public stock market. Information saliency and understandability increase the probability of success. More specifically, the logit regression results show that including salient attention-grabbing elements, namely, a video and a graphic representation of growth, improve the probability of campaign success. In addition, the findings suggest that salient, readily available information on the founding team, in the form of members' pictures and LinkedIn profile links, is associated with an increased likelihood of success. Finally, writing the campaign text in a more understandable format is shown to increase the probability of success. The findings are robust to the inclusion of control variables and hold with alternative measures of success: the percentage of the target amount raised, the absolute amount raised, and the number of investments.

The results have important implications for academics and practitioners alike. To the growing literature on equity crowdfunding, this thesis presents novel evidence on the importance of limited investor attention. In addition, my findings suggest that crowdfunding can be used as a new platform to study limited investor attention. Fundraisers can optimize campaign success by including elements that grab investors' attention, and by providing information in an understandable format. On the flip side, also policymakers should consider investors' limited attention in the regulation of equity crowdfunding.

Keywords equity crowdfunding, behavioral finance, limited attention, saliency, understandability

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Joukkorahoituksen suosio kasvaa eksponentiaalisesti. Sen uusin muoto, osakepohjainen joukkorahoitus, avaa korkeariskisen start up –sijoittamisen kaikille. Se on löyhemmin säädeltyä kuin esimerkiksi pörssilistautuminen, mutta houkuttelee myös kokemattomampia sijoittajia. Tämä herättää kysymyksen siitä, millä kriteereillä sijoituspäätökset osakepohjaisessa joukkorahoituksessa tehdään. Pro gradu -työssäni tutkin ihmisen rajoitetun tarkkaavaisuuden vaikutusta osakepohjaisen joukkorahoituksen onnistumiseen hyödyntäen Hirshleiferin ja Teoh'n (2003) kehittämää mallia. Heidän mukaansa ihmisen rajoitetun tarkkaavaisuuden vuoksi pelkkä taloudellisen informaation muoto, sisällön lisäksi, vaikuttaa siihen, miten tieto tulkitaan.

Otos kattaa 147 osakepohjaista joukkorahoituskampanjaa Invesdorin, johtavan pohjoismaisen toimijan, alustalla sen perustamisesta vuonna 2012 toukokuuhun 2017. Invesdor toimii "kaikki tai ei mitään" -mallilla. Jos yrityksen asettama keräystavoite ei täyty, kampanja peruutetaan ja rahat palautetaan sijoittajille. Mittarini kampanjan onnistumiselle on dummy-muuttuja, joka saa arvon yksi tavoitteen täyttyessä, ja muutoin arvon nolla.

Löydökseni ovat Hirshleiferin ja Teoh'n (2003) mallin mukaisia, ja linjassa muiden rajoitettua tarkkaavaisuutta käsittelevien tutkimusten kanssa. Informaation silmiinpistävyys ja ymmärrettävyys kasvattavat kampanjan onnistumisen todennäköisyyttä. Logistinen regressioanalyysi osoittaa, että silmiinpistävien ja huomiota herättävien elementtien, tässä tutkimuksessa videon ja kasvugraafin, lisääminen parantaa kampanjan onnistumisen todennäköisyyttä. Lisäksi silmiinpistävän ja helposti saatavilla olevan informaation, tässä tutkimuksessa perustajatiimin jäsenten kuvien ja LinkedIn-profiililinkkien, lisääminen parantaa onnistumisen todennäköisyyttä. Myös kampanjatekstin parempi ymmärrettävyys kasvattaa onnistumisen todennäköisyyttä. Löydökset pysyvät merkitsevinä myös kontrollimuuttujien kanssa, sekä eri onnistumisen mittareilla. Muut mittarit ovat: saavutettu prosenttiosuus keräystavoitteesta, kerätty rahasumma ja sijoitusten lukumäärä.

Tulokset ovat merkittäviä niin tutkijoiden kuin alan ammattilaistenkin kannalta. Jatkuvasti laajenevaan kirjallisuuteen osakepohjaisesta joukkorahoituksesta tutkielmani tuo uusia tuloksia sijoittajien rajoitetun tarkkaavaisuuden merkityksestä. Lisäksi löydökseni indikoivat, että joukkorahoitusta voidaan käyttää uutena alustana sijoittajien rajoitetun tarkkaavaisuuden tutkimiseen. Rahoitusta keräävät yritykset voivat optimoida kampanjansa menestystä lisäämällä huomiota herättäviä elementtejä ilmoitukseen sekä tarjoamalla tietoa kampanjasta yksinkertaisessa muodossa. Vastaavasti myös päättäjien tulee huomioida sijoittajien rajoitettu tarkkavaisuus osakepohjaisen joukkorahoituksen säätelyssä.

Avainsanat osakepohjainen joukkorahoitus, behavioristinen rahoitus, rajoitettu tarkkaavaisuus, silmiinpistävyys, ymmärrettävyys

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1. Introduction

1.1. Background and motivation

Start-up investing, previously a field dominated by the extremely wealthy, is now open for everyone. Crowdfunding is a novel method to raise funds from several individuals, usually via an Internet platform. In exchange for their money, investors receive equity or debt securities, rewards, or in the case of donation-based crowdfunding, nothing. The most novel form, equity crowdfunding – also known as investment-based crowdfunding, securities crowdfunding, or crowdinvesting – enables individual investors to gain exposure to the high-risk start-up market.

What started as a platform to pledge money for small ventures and individual projects is now becoming a valid source of funding for companies. The global crowdfunding volume was estimated to be $34.4 billion in 2015, having grown at a compounded annual growth rate of 134% since 2012 (Massolution, 2015). Crowdfunding is not attracting only individual investors. Venture capitalists and business angels show increasing interest in using reward-based crowdfunding to test the companies they invest in (Colombo and Shafi, 2016). Money is flowing back to the investors too: Several equity crowdfunded companies have made a successful exit via trade sales or even Initial Public Offerings (IPO). For example, the first exit in the UK was the sale of E-Car Club to Europcar in 2015 (Crowdcube, 2017). Finland has seen one exit so far, as Heeros Oyj was listed on First North in 2016 (Invesdor, 2016).

For companies, crowdfunding provides a new venue to raise funds. In increasing competition, time to market is a crucial determinant of success (Carrillo and Franza, 2006; Cooper and Kleinschmidt, 1994). Crowdfunding is a flexible tool to raise funds rather quickly without overburdening regulatory requirements (Hornuf and Schwienbacher, 2016). Based on entrepreneur interviews, the biggest advantage of crowdfunding is the speed at which a financing round can be completed. (Brown et al., 2015). In addition to raising funds, ventures seek crowdfunding to increase awareness and receive feedback for their idea (Belleflamme et al., 2013; Gerber et al., 2012).

Rewards-type crowdfunding is essentially pre-selling, and the campaign pitches often resemble advertisements. Appearance-wise, equity crowdfunding campaigns do not differ much from reward campaigns. Some platforms offer equity crowdfunding among other types of

crowdfunding. Also, like other crowdfunding campaigns, equity campaigns are often advertised on social media. However, whereas reward-based crowdfunding is relatively riskless[1], equity crowdfunding entails a substantial risk of losing the whole investment, which can amount to thousands of euros. Equity crowdfunding might attract rather inexperienced investors to invest in high-risk securities. Indeed, according to a recent survey of the investors of Invesdor, the leading Finnish platform, 30% of equity crowdfunding investors do not participate in the stock market (Lukkarinen, 2017). Relatively loose regulation implies more flexibility for companies to raise funds, but for capital providers, it means less protection. This can be harmful especially for unsophisticated investors.

In light of all this, it is fruitful to study the factors on which equity crowdfunding investors base their decisions. As often is the case with such a novel phenomenon, research on the field is still scarce. The recent studies on crowdfunding investors' decision-making draw from research on angel and venture capital investing, and other types of crowdfunding. The investment criteria used by professional investors have been applied to equity crowdfunding too, with varying levels of success. Also, success determinants identified in other types of crowdfunding have been tested in equity crowdfunding.

Though widely studied in other fields of finance, investors' limited attention has not been considered in crowdfunding research. Human attention is a scarce resource, which affects decision-making (Kahneman, 1973). We do not make decisions based on all the information available, but rather try to optimize and find shortcuts, conserving our cognitive capacity. For example, we selectively attend to some stimuli while ignoring others, unconsciously. I expect this to be of concern especially with the advertisement-like crowdfunding campaigns, in which many investors are unsophisticated.

Hirshleifer and Teoh (2003) offer a testable framework for this study. They show that merely the form of financial information can influence readers' evaluations. Information that is salient

[1] For example, in a study on the donation and reward-based crowdfunding platform Kickstarter, the average pledge per backer is roughly $64. While most campaigns deliver the promised product or service later than expected, merely 3.6% of the successful campaigns fail to deliver, corresponding to less than 0.5% of the total money pledged. (Mollick, 2014)

and in a simple format is more understandable than information that does not stand out and is presented in a complicated form.

In this thesis, I test the implications of Hirshleifer and Teoh (2003) in equity crowdfunding. Within crowdfunding platforms, campaigns are published in a somewhat standardized format. For example, page layout, section headings, and the overall content of sections are predetermined. However, it is at the fundraiser's discretion to decide the writing style and add additional elements to arouse interest.[2] The framework of Hirshleifer and Teoh (2003) implies that simply altering the form of presenting a crowdfunding campaign can influence investors' assessment.

1.2. Research question and main findings

The purpose of this thesis is to answer the following research question: *Does investors' limited attention influence equity crowdfunding campaign success?* To answer this question, I divide it into three parts, all of which draw from Kahneman's (1973) theory of attention and the framework of Hirshleifer and Teoh (2003). First, I study the inclusion of salient attention-grabbing elements in a campaign. Second, I analyze the saliency of the information on the founding team. Finally, I measure the understandability of the campaign description.

In line with the proposals of Hirshleifer and Teoh (2003), I find that limited investor attention plays a significant role in determining equity crowdfunding campaign success. Including attention-grabbing elements in the campaign pitch, providing salient information about the founding team, and writing the description in an understandable format are all associated with an increased probability of campaign success.

Including a video or a graphic representation of growth in the campaign pitch both increase the likelihood of success by 18 percentage points. A one-unit decrease in the text difficulty – i.e., two years less education required to understand the text – is associated with a 20-percentage-point increase in the probability of success. Also, the results tentatively suggest a 19-

[2] An example depicting the standardized layout and some discretionary elements can be found in Appendix A.

percentage-point increase in the likelihood of success with the inclusion of team's pictures and LinkedIn profile links. However, the statistical significance of the effect of salient team information diminishes with other limited attention variables.

The findings are robust to the inclusion of previously identified success factors, such as the founding team characteristics, equity retention, development stage, patent, and angel or venture capital funding, as control variables. In addition to the probability of success, the results hold with various other measures. Including an attention-grabbing element in the campaign pitch is associated with an increase in the percentage of the target amount raised, the absolute amount raised, and the number of investments. Respectively, information saliency on the founding team is positively associated with the percentage of the target amount raised, the absolute amount raised, and the number of investments. Finally, easier text readability is associated with a larger percentage of the target amount raised and a greater number of investments.

Contrary to other empirical studies, I find that in addition to economic factors, altruism plays a role in equity crowdfunding investors' investment decisions. Support-type campaigns, namely, breweries and distilleries, sports clubs, and culture projects, are on average more successful than other campaigns, even after controlling for the previously identified success factors.

1.3. Contribution to the existing literature

Research on crowdfunding, especially on equity crowdfunding, is scarce. Moreover, despite widely covered in other fields of finance, there is no research on the effect of limited attention on crowdfunding. This paper supports Kahneman's (1973) theory of attention and contributes to the current crowdfunding literature by showing that limited attention is a significant determinant of equity crowdfunding campaign success, even after controlling for previously identified success factors. In addition, I find novel evidence that support campaigns are more likely to be successful. Contrary to previous empirical results, this finding suggests that also altruistic, non-monetary factors, play a role in equity crowdfunding investors' decision-making.

The findings of the thesis contribute not only to crowdfunding research but also more broadly to the literature on limited attention. The results support the use of crowdfunding campaigns as a completely new platform to study limited investor attention. Compared to, for example,

prospectuses prepared for IPOs, which are heavily regulated, there is significantly more variance in the form and content of crowdfunding campaign pitches. Also, crowdfunding attracts both professional and unsophisticated investors. Notably, many platforms gather information on the investors' primary motivations to invest in each campaign (e.g. whether the investment is made for support or simply to generate financial returns), thus enabling studies on different investor and project types. This variety opens intriguing new possibilities for research.

The results have practical implications as well. To maximize the probability of success, entrepreneurs should aim to grab potential investors' attention and present information on the venture in a salient and understandable format. On the flip side, also regulators should consider the limited attention of crowdfunding investors. Equity crowdfunding regulation should aim to mitigate the effect of limited investor attention and support fact-based decision-making.

1.4. Limitations of the study

The main limitation of this study is potential endogeneity and reverse causality. As data availability is limited, not every aspect of campaign quality can be controlled. Funding success could be explained simply by the underlying venture quality, which the explanatory variables fail to address. Moreover, an unobserved venture quality factor could explain both the better campaign outcomes and the better-quality campaign pitches. Based on the results of this thesis, it cannot be concluded whether improving the saliency and clarity of information affects funding success, or are successful ventures just more likely to prepare quality pitches. Due to limited data availability, this potential endogeneity cannot be controlled for but should be kept in mind when drawing conclusions on the results of this thesis.

Another key limitation is the relatively small number of campaigns in the sample, which possibly decreases the statistical significance of the results. In addition, the study covers campaigns of a single platform, on which most of the investors are from Finland. In terms of platform characteristics, Invesdor is comparable to other major equity crowdfunding platforms, such as Crowdcube and Seedrs. In addition, Finland is an open Western economy, so the results are rather representative of other developed countries. However, investor characteristics, such

as sophistication, may vary between platforms, which can affect the generalization of the results.

1.5. Structure

The rest of this thesis is structured as follows. Section 2 reviews the relevant literature on crowdfunding and limited attention. Section 3 presents the hypotheses and the rationale behind them. Section 4 describes the data sample and the methodologies used in this study. In Section 5, I present and discuss the empirical results. In Section 6, I perform robustness checks to validate the results. Section 7 concludes.

2. Background and literature review

2.1. Crowdfunding

This section begins with a brief introduction to crowdfunding and the crowdfunding market. Then, I summarize the relevant literature on the motives behind seeking crowdfunding and investing in it.

2.1.1. Definition and market

As the name suggests, crowdfunding stands for raising funds from a large group of people. Refining the work of Schwienbacher and Larralde (2010), Mollick (2014) presents the following definition, adequately covering the spectrum of different types of crowdfunding. "Crowdfunding refers to the efforts by entrepreneurial individuals and groups – cultural, social, and for-profit – to fund their ventures by drawing on relatively small contributions from a relatively large number of individuals using the Internet, without standard financial intermediaries."

Crowdfunding is an umbrella term for four different types of funding, which vary on the return provided for the investor (Bradford, 2012). In *equity crowdfunding,* investors get either shares or equity-like loan instruments in exchange for their investment, whereas in *debt crowdfunding*

the investors receive bonds or other debt securities. *Reward or pre-purchase model* is typically used for a product or service before launching it into the market. In exchange for their money, the contributors usually get the product or service in the future. Finally, in *donation crowdfunding*, contributors receive nothing in exchange for their money. Rather, it is a type of charity often used by individuals or organizations promoting some noble cause.

Sized at $34.4 billion in 2015, the crowdfunding market was still in 2015 dominated by peer-to-peer lending, which amounted to $25 billion. Reward and donation crowdfunding formed around $5.5 billion, and equity crowdfunding roughly $2.6 billion. (Massolution, 2015)

While the first crowdfunding platforms were founded already in the early 2000s (Freedman and Nutting, 2015), equity crowdfunding is a more novel phenomenon. The first publicly available equity crowdfunding platforms are based in the UK: Crowdcube, founded in 2011, and Seedrs in 2012. Invesdor, the first platform in Finland, launched in 2012. In the US, equity crowdfunding became available for non-accredited[3] investors in 2016 with the approval of Title III of the Jumpstart Our Business Startups (JOBS) Act (SEC, 2015).

2.1.2. Motivations to seek crowdfunding

When starting a venture, founders usually first put up their own money, then reach out to friends and family, and after that, seek funding from venture capitalists or business angels. However, many new companies face a funding gap, as they are not able to raise funds from professional investors (World Bank, 2013). Moreover, after the global financial crisis, angel investors and venture capitalists have shifted their focus from seed to later-stage investments (Block and Sandner, 2009). Crowdfunding provides a potential source of finance to reduce the funding gap (Röthler and Wenzlaff, 2011). Figure 1 depicts the capital needs of a company in different stages of development.

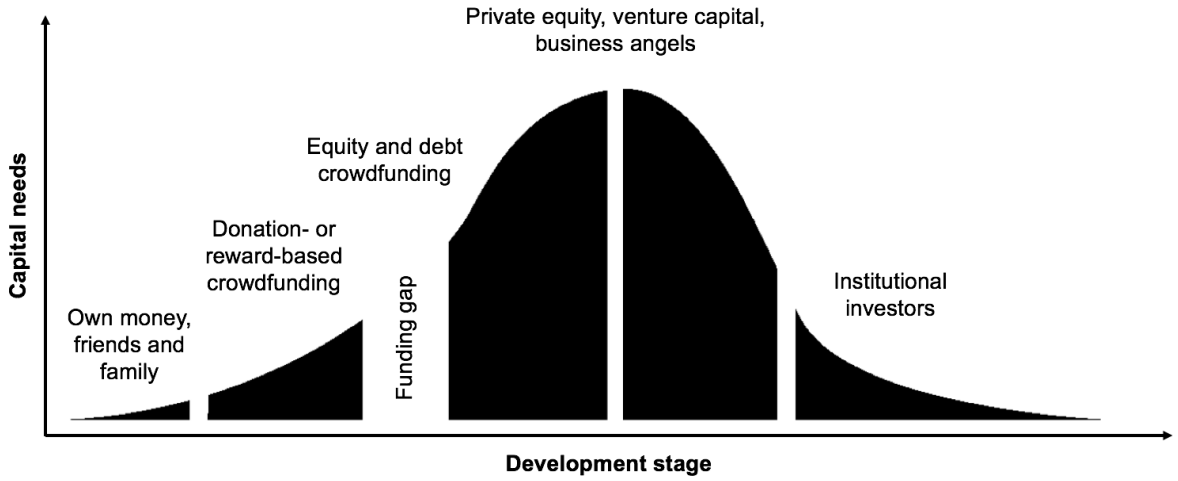
However, money is not the only objective of crowdfunding. In an interview-based study, Gerber et al. (2012) find that, in addition to raising funds, the primary motivations to seek

[3] Investors who earn more than $200,000 annually or have a net worth exceeding $1 million are considered accredited.

crowdfunding are: establishing relationships, receiving validation, replicating the success of others, and expanding awareness. Similarly, another interview study reports that ventures seek crowdfunding to raise money, increase awareness, and validate their idea (Belleflamme et al., 2013). Moreover, fundraisers appreciate the speed and flexibility of funding, and the low number of formal obligations required (Brown et al., 2015; Moritz and Block, 2016). Crowdfunding enables companies to raise funds without giving up too much ownership and control (Schwienbacher and Larralde, 2010).

Figure 1: Crowdfunding and funding lifecycle

This figure presents the capital needs of a venture in different development stages. Modified from World Bank (2013).



2.1.3. Motivations to invest in crowdfunding

Investors have heterogeneous motives to invest in a crowdfunding campaign, and the motives vary between different crowdfunding models (Lin et al., 2014; Moysidou and Spaeth, 2014; Ordanini et al., 2011). Not only do the motivations vary between different models, but also within them. Investors can invest to support important causes, to help the founders personally, as a political statement, or even as a joke, as was the case with building a RoboCop statue in Detroit (Mollick, 2014).

In a survey-based study, Lukkarinen (2017) identifies three sub-groups of equity crowdfunding investors; *donation-oriented supporters*, *return-oriented supporters*, and *pure investors* all have different incentives to invest in a crowdfunding campaign. Pure investors seek financial returns for their investment, donation-oriented supporters invest merely to help the company, and return-oriented supporters invest to both gain financial returns and support the venture. Notably, the author identifies certain types of projects that have attracted mainly the supporters' investments. These include, for example, sports clubs, breweries, and cultural projects. In this thesis, I include a dummy variable flagging these support-type campaigns to control for the varying motives to invest.

Nevertheless, some common characteristics of crowdfunding investors have been identified. They tend to be innovation-oriented and interested in interacting with others, identify themselves with the product or the company, and deem financial returns important (Gerber et al., 2012; Ordanini et al., 2011).

2.2. Determinants of funding success

The literature on equity crowdfunding is still extremely scarce. Therefore, this section draws from the research on the success criteria of similar sources of financing: angel investor and venture capital funding, and other types of crowdfunding.

As depicted in Figure 1, equity crowdfunding has the potential to fill the funding gap companies may face before being able to attract professional investors. Indeed, the companies that angel investors and venture capitalists invest in are somewhat similar to the ones seeking crowdfunding. The ventures are often in seed stage with nonexistent or limited sales, and the liquidity of the shares is minimal (De Buysere et al., 2012). Moreover, angel investors and venture capitalists are also investing in crowdfunding (Brown et al., 2015).

Equity crowdfunding fundamentally differs from other types of crowdfunding, as it involves an expectation of financial return. Rewards-based crowdfunding is essentially pre-selling, whereas investors in donation campaigns get nothing in return. However, the crowdfunding platforms are similar, or sometimes even the same, and could, therefore, show similar funding dynamics. Moreover, the findings of Lukkarinen (2016) suggest that the investment criteria used by equity

crowdfunding investors are more analogous to the criteria of other types of crowdfunding than those of angel and venture capital investing.

2.2.1. Angel investor and venture capital funding

There is a vast amount of research on the angel investor and venture capitalist funding criteria. This section aims to summarize the part of the literature that is relevant in the context of equity crowdfunding.

For both angel investors and venture capitalists, the role of human capital is vital in determining whether early-stage companies get funding or not. Several studies emphasize the founding team quality as a crucial investment criterion (see, e.g., Baum and Silverman, 2004; MacMillan et al., 1985; Prowse, 1998; Sudek, 2006). More recently, in a randomized field experiment, Bernstein et al. (2016) show that information about the founding team is particularly important for angel investors, while information about firm traction or existing lead investors is of less importance. In addition to the team, the company's alliances are important, as they indicate access to valuable resources and knowledge, and serve as external endorsements (Baum and Silverman, 2004).

Business angels and venture capitalists value passionate founders and look for signs of commitment. Entrepreneurs must be prepared to pursue the opportunity they have identified (Chen et al., 2009). An important and concrete sign of commitment for venture capitalists is equity retention (Busenitz et al., 2005). It reduces information asymmetries and signals quality (Leland and Pyle, 1977). Moreover, it aligns the founding team's incentives with the investors' objectives. For angel investors, managerial equity ownership is the primary incentive mechanism (Prowse, 1998). A solid business plan is also seen as an important sign of preparedness and commitment (Cardon et al., 2009; Chen et al., 2009).

Other factors angel investors consider are the credibility of the business plan and exit opportunities (Prowse, 1998; Sudek, 2006). Research on venture capital highlights the sales and growth potential, competitive advantage and proprietary protection, return on investment, and exit opportunity (MacMillan et al., 1985).

2.2.2. Crowdfunding

Though there is a considerable amount of research on crowdfunding, many papers are descriptive and focus on studying the phenomenon in general. The first quantitative studies on the success determinants were published in 2013 (Moritz and Block, 2016). This section reviews the relevant empirical findings from the capital seekers' perspective.

The human and social capital of the founding team have been shown to affect funding success. Management team's education and appropriate background increase the chances of successful funding (Ahlers et al., 2015; Mollick and Kuppuswamy, 2014). Also, the size of the founders' social networks is positively associated with campaign success probability (Hekman and Brussee, 2013; Mollick, 2014).

Reducing information asymmetries between founders and investors tends to increase the chance of success. For example, providing financial information has a positive effect on success (Ahlers et al., 2015; Lukkarinen et al., 2016; Mollick, 2014). Similarly, outside endorsements are positively associated with campaign success (Mollick, 2013). Also, updates posted by the capital seeker have a lagged positive effect on the number of investors and the amount collected (Block et al., 2017).

Crowdfunding investors seem to favor certain types of projects. Ventures with a social or non-profit cause are more likely to be fully funded (Belleflamme et al., 2013). In addition, more understandable products and ideas are more likely to be successful (Belleflamme et al., 2013; Lukkarinen et al., 2016).

In addition, certain campaign properties have been shown to influence funding success. A higher funding target is associated with a decreased probability of success. (Cumming and Leboeuf, 2015; Frydrych et al., 2014; Mollick, 2013). Also, a longer campaign duration decreases the chance of success, as it can be interpreted as lack of confidence. (Frydrych et al., 2014; Mollick, 2014).

Finally, the way the campaign is presented and described is a significant determinant of success. The language and phrases used in the project description forecast the funding success of a project (Mitra and Gilbert, 2014). Also, including a video and pictures in the description is associated with an increased probability of success (Koch and Siering, 2015; Mollick, 2013). Parhankangas and Renko (2017) study video pitches in crowdfunding in more detail and find

that the linguistic styles of the videos can predict the success of social crowdfunding campaigns. The authors report concreteness, preciseness, and interactivity in the pitch as positive determinants and psychological distancing as a negative determinant of success.

2.2.3. Equity crowdfunding

As the number of empirical studies on the success factors of equity crowdfunding is small, and the findings are often somewhat contradictory, this section goes through the most relevant studies one by one.

Ahlers et al. (2015) are the first to empirically study the determinants of success in equity crowdfunding using the offering documents as a data source. In a sample of 104 funding rounds in the Australian Small Scale Offerings Board (ASSOB) crowdfunding platform, the authors find the venture's human capital to be a significant determinant of success. Ventures with more board members and highly educated founders are more likely to get funded. Surprisingly, neither intellectual capital (in the form of a granted patent) nor social capital (measured by the share of non-executive directors on the venture's board) shows a significant effect on funding success. The paper also reports, rather counterintuitively, that winning an award or grant is negatively associated with funding success. In line with studies on other types of crowdfunding, lower uncertainty is found to increase the likelihood of funding success. Providing financial projections, and retaining a larger share of equity, are associated with a higher probability of success. Notably, when discussing their results, the authors emphasize the limitations in data and variable formation, which may explain the lack of significant results. As the data availability on crowdfunding campaigns is relatively low, studies often rely on rather crude proxies.

With a sample of 271 projects listed on the UK platforms Crowdcube and Seedrs in 2011 to 2014, Vismara (2016) studies the effect of equity retention and social networks on equity crowdfunding success. In accordance with Ahlers et al. (2015), the paper reports that giving out a smaller share of equity is associated with a greater probability of success, a larger number of investors, and a greater percentage of the target funded. Contrary to Ahlers et al. (2015), Vismara (2016) finds a significant positive relation between founders' social capital (measured

by the number of founders' LinkedIn connections) and funding success, most likely due to a different proxy of social capital.

Ralcheva and Roosenboom (2016) study 541 equity campaigns on Crowdcube in 2012 to 2015 and find that retaining equity has no effect on the probability of success, but is positively associated with the number of investors. Also, the authors report that protecting intellectual property with patents and winning a grant both have a significant positive effect on the likelihood of success and the number of investors. Other significant success factors the authors report are young firm age, existing sales, having advisors and mentors on board, being backed by a business angel, and being situated in a big city.

Analyzing 60 equity campaigns on Invesdor, Lukkarinen et al. (2016) find no evidence of equity crowdfunding investors evaluating companies with similar criteria as angel investors and venture capitalists. The study utilizes expert ratings of the team, market, concept, scalability, offer terms, and stage of development, and finds no significant relation with success for any of these ratings. However, the founders' networks and understandability of the company's concept and offering are positively associated with the amount raised and the number of investors. In addition, the authors show that minimum investment is negatively associated with the amount raised and the number of investors. In line with earlier studies, provision of financials is found to be a positive and campaign duration a negative determinant of the amount raised. Finally, the authors report that early funding from private networks is a significant positive determinant of success, indicating herd behavior among equity crowdfunding investors.

Vulkan et al. (2016) find evidence of herding too. They show that the campaign's performance in the first week is a strong determinant of the likelihood of success. Moreover, they find that the investing history of the campaign's investors is significantly associated with the probability of success. The greater the share of successful campaigns in the investors' history, the greater the likelihood that the investor invests in a successful campaign. Vismara (2016a) reports similar results. He finds that early contributions and investments from public profile investors increase the probability of success by attracting other investors.

All in all, research on the success determinants of equity crowdfunding is scarce and suffers from the lack of standardized data. The contradictory results in different papers are potentially due to differences in the choice of both the explanatory proxy variable and the dependent

variable. Moreover, small sample sizes may have led to statistically insignificant results in some studies.

2.3. Limited attention

This section begins by presenting the theoretical framework used in this study. After that, I draw from the relevant literature to identify how the framework can be applied in the crowdfunding context.

2.3.1. Theoretical framework

Human attention is a scarce cognitive resource. This has broad consequences for decision-making. Firstly, humans selectively attend to some stimuli in preference to others, sometimes completely ignoring other stimuli. Secondly, *the capacity model of attention* suggests that human's capacity to perform mental work is limited. Some tasks demand more mental effort than others, and when the supply of attention does not meet the demand, performance deteriorates. Individuals do not have the capacity to absorb all the information available but have to allocate their mental resources. (Kahneman, 1973)

Hirshleifer and Teoh (2003) model the consequences of alternative means of presenting information in financial reporting, when investors have limited attention and processing power. The authors study how the level of discretion in pro forma earnings disclosure, the method of accounting for employee option compensation, and the degree of aggregation in reporting affect investor perceptions and the stock price. The paper concludes that information that is salient and presented in a simple format is better understood than less salient, complexly presented information. In addition to the actual content reported, merely the form of presentation can influence how investors evaluate the information and thus affect market prices.

The empirical implications made by Hirshleifer and Teoh (2003) are shown to hold in the stock market. Barber and Odean (2008) show that individual investors are net-buyers of attention-grabbing stocks. Investors are only aware of the stocks that have caught their attention, and thus make their buying decisions on a limited subsample of all stocks. Moreover, investors can only

sell what they own, so increased attention is more likely to result in buying than selling. The positive relation between increased attention on a stock and consequent trading volume has been studied extensively, and shown to exist with various measures of attention (see, e.g., Barber and Odean, 2008; Da et al., 2011; Engelberg and Parsons, 2011).

In addition, in line with the theoretical framework set by Hirshleifer and Teoh (2003), individual investors are more likely to invest in companies with clear and concise financial disclosures (Lawrence, 2013). Also, more readable disclosures initiate stronger reactions from individual investors (Rennekamp, 2012). Individuals' valuation judgments of good (bad) news are more positive (negative) when readability of the news is high.

The framework of Hirshleifer and Teoh (2003) has interesting implications for crowdfunding campaigns as well. The next two sections present evidence on which elements are salient and grab attention, and how text understandability can be measured.

2.3.2. Measuring saliency

In finance, extreme returns or trading volume, as well as news coverage, is shown to increase investors' attention on a stock (Barber and Odean, 2008). Interestingly, being listed on the daily winner and loser rankings increases investor attention more than the absolute magnitude of returns (Ungeheuer, 2017). The fact that simply being listed is more important than the absolute financial performance highlights the importance of limited attention. The listing makes the information salient to the investors, thus setting off a market reaction.

Psychology and marketing researchers have empirically studied which elements draw attention. Pictures show superior recognition compared to text (Nelson et al., 1976). More recently, results from an infrared eye-tracking study show that images draw more attention than text elements, and larger text is more attention-drawing than small text (Pieters and Wedel, 2004). Also faces, especially those with an emotional expression, draw attention (Palermo and Rhodes, 2007). Finally, supporting visuals in a presentation increase both listener attention and persuasion (Vogel et al., 1986).

2.3.3. Measuring text understandability

Text understandability can be measured with various reading indices. For example, the Flesch Reading Ease (Flesch, 1948), and the Flesch–Kincaid Grade Level (Kincaid et al., 1975) use word and sentence length of a text, with slightly different weightings, to measure how difficult it is to understand. Other indices using similar methods include, for example, the Automated Readability Index and the Fog count (Kincaid et al., 1975).

The Dale-Chall readability formula differs from other readability measures fundamentally, as it is based both on the average sentence length and the percentage of difficult words (Dale and Chall, 1948). Difficult words were determined in a test on a group of American fourth-graders. If at least 80% of the students were familiar with the word, it is considered an 'easy' word, the rest being difficult ones. The list of easy words now consists of 3000 words (Dale and Chall, 1995). As the Dale-Chall readability formula considers vocabulary in addition to word and sentence structure, it should better measure jargon than the other readability indices.

2.4. Limited attention in crowdfunding

To the best of my knowledge, there is no research focusing on limited attention in the crowdfunding context. However, evidence suggests that limited attention does play a role in crowdfunding investors' decision-making. For example, in donation and reward-based crowdfunding, the inclusion of a video and pictures in the campaign pitch is associated with an increased probability of success (Koch and Siering, 2015; Mollick, 2013). The form of information is important too. Mitra and Gilbert (2014) identify certain phrases that forecast the funding success of a crowdfunding campaign, and Parhankangas and Renko (2017) show that linguistic styles play a role as well.

There is indicative evidence that information clarity is a determinant of success as well. The findings of Lukkarinen et al. (2016) suggest that crowdfunding investors focus on clearly observable factors when making investment decisions. Survey results show that the most important criterion for investing in equity crowdfunding is clarity of what the company does (Lukkarinen, 2017). Also, companies with more understandable products are more likely to be funded (Belleflamme et al., 2013).

3. Hypotheses

The objective of this thesis is to study whether investors' limited attention affects equity crowdfunding campaign success. To concretize the research question, I divide it into three testable hypotheses.

Humans have a limited cognitive capacity (Kahneman, 1973). As a result, we do not make decisions based on complete information. Instead, we optimize. For example, when trying to choose the best alternative, we do not consider all the possible options, but rather the options we are aware of: the ones that have caught our attention. Indeed, increased attention on a stock is associated with buying pressure on that stock (Barber and Odean, 2008). Building on these findings, the first hypothesis is as follows.

Hypothesis 1: Including attention-grabbing elements in the campaign pitch is positively associated with campaign success

Information is better understood in a more salient format (Hirshleifer and Teoh, 2003). Also, the founding team is the most important factor for angel investors when making investment decisions (Bernstein et al., 2016). Objectively measuring team characteristics is difficult, but making the information about the team salient and readily available should facilitate investors' evaluation, easing the cognitive burden and potentially increasing persuasion. Therefore, the second hypothesis is as follows.

Hypothesis 2: Including salient information on the founding team in the campaign pitch is positively associated with campaign success

Finally, a simple writing requires less effort to read and understand than a complex text and has a better likelihood of persuading the reader (Hirshleifer and Teoh, 2003). This relation is shown to hold in the stock market (Lawrence, 2013; Rennekamp, 2012). Also, crowdfunding investors deem that clarity of what the company does is an important decision factor (Lukkarinen, 2017; Scheder and Arboll, 2014). The third and final hypothesis builds on these findings.

Hypothesis 3: Better readability of the campaign description is positively associated with campaign success

The results of this study support all three hypotheses, are robust to the inclusion of control variables, and hold with various measures of campaign success.

4. Data and methods

In this section, I first introduce Invesdor, the equity crowdfunding platform chosen as the data source for this study. Then, I describe the data gathering process and sample, and the variables used. After that, I present descriptive statistics of the data. Finally, I describe the methods used in this study.

4.1. Invesdor

Founded in 2012, Invesdor Oy is one of the leading Nordic equity crowdfunding platforms. Like most other major equity crowdfunding platforms, it operates on an "all or nothing" model, in which the campaign is canceled if the minimum target set by the fund seekers is not fulfilled. As of May 2017, the total amount invested via Invesdor is over €31 million.

The reason for choosing Invesdor as the data source of this study is two-fold. First, Invesdor is a leading player in the Nordic equity crowdfunding market. The platform has so far listed campaigns from Denmark, Estonia, Finland, Norway and the United Kingdom, and the investors are from various countries. Thus, I expect the results to be representative of people in developed Western economies. Second, the web page structure of Invesdor is standardized and convenient for web scraping, thus enabling automatized data collection.

4.2. Sample and variables

The data are gathered from the Finnish crowdfunding platform Invesdor's website. Bonds and IPOs are excluded. The sample used in this study covers 147 equity campaigns since the platform's launch in 2012 until May 2017. Out of the 147 campaigns, 18 descriptions are provided only in Finnish and are thus inadmissible for assessing the Dale-Chall readability score. To get comparable results, campaigns in different currencies are converted into euros

using the average European Central Bank's euro foreign exchange reference rates in the starting month of the campaign. Descriptive statistics of the sample are presented in Section 4.2.4.

4.2.1. Measuring campaign success

In the "all or nothing" model used on the Invesdor platform, the fundraisers set a minimum target amount and will only receive the capital if that limit is reached. Otherwise, all investments are returned, and the round is canceled. Thus, as in Ralcheva and Roosenboom (2016) and Vismara (2016a), success is measured with a dummy variable, which takes the value of one if the round goes through and zero otherwise. The underlying assumption is that the fundraisers set the target to match their capital needs. If the capital requirement is fulfilled, the funding round can be deemed successful.

Of course, it could be argued that encoding success into a binary number eliminates the possibility to compare successful campaigns with one another. Thus, as a robustness check, I will also study other measures of success in Section 6, namely, the percentage of the target raised, the absolute amount raised, and the number of investments.

4.2.2. Measuring limited attention

I study the effect of limited investor attention by examining whether the campaign includes elements that grab attention, by assessing the information availability on the founding team, and by measuring the campaign text difficulty.

As attention-grabbing elements, I use dummy variables for the inclusion of a video in the campaign pitch and of a graphic representation of either realized or forecasted business growth. Here, graphic representation stands for a bar chart or a line graph. Also, a broad definition of business growth is used, including sales and profit growth, or growth in the number of orders or customers. An example can be found in Appendix A. Notably, it could be argued that only campaigns with prominent sales trajectory decide to present it graphically. Hence, I include the numeric growth forecast in the regression as a robustness check in Section 6.

For angel investors and venture capitalists, the characteristics of the founding team are essential for the funding decision. Team quality is difficult to measure objectively, but the saliency of the team information is quantifiable. In this thesis, I measure information saliency on the founding team with a dummy variable, which takes the value of one, if at least 50% of the team members have pictures and links to their LinkedIn profiles in the campaign pitch, and zero otherwise. Of course, one could argue that team pictures are attention-grabbers rather than a proxy for information saliency. Nonetheless, both attention-grabbers and information saliency fit under the theory of limited attention. A detailed analysis of this issue is beyond the scope of this thesis.

Finally, I use the Dale-Chall readability formula to measure the difficulty of the campaign description (Dale and Chall, 1948). It returns the US grade level required to understand a text. Thus, the higher the grade level, the more difficult the text is to understand. A one-unit increase (decrease) in the score corresponds to two years more (less) education required to easily understand a text. The formula is based on the share of difficult words in a piece of writing and the average word count per sentence. There are various readability indices, but the Dale-Chall formula is the only one with the potential to account for jargon. The others are solely based on word and sentence length. As a robustness check, I also run tests with another popular measure of readability, the Flesch Reading Ease Score (Flesch, 1948).

4.2.3. Control variables

To validate the results on the effect of limited attention, I control for the criteria used by professional investors and include other controls identified in existing studies on equity crowdfunding.

The measurements of traditional investment criteria derive from the venture capital and business angel literature and have been studied in equity crowdfunding research as well. Team size, as well as having advisors on the board, proxy human capital. Percentage of equity offered measures management team's commitment to the project. Being backed by a business angel or venture capitalist is a signal of quality, as it shows that a professional investor sees potential in the venture. A patent granted or pending indicates intellectual property protection.

The motivations to invest in crowdfunding are both financial and altruistic. Therefore, I control for non-economic factors as well. Lukkarinen (2017) identifies certain types of projects, which have attracted mainly support-type investors' investments. Based on her results, I flag three groups of projects that can be designated as support projects: sports clubs, culture projects, and breweries or distilleries. As the number of campaigns in each group is small, I group them in a single *Support* variable.

Finally, I control for the minimum funding target and the minimum investment. Intuitively, the larger the funding target, the more difficult it is to reach it. On the other hand, campaigns with large funding targets are likely to raise greater amounts of funding than those with small targets. A sizable minimum investment may drive away investors with financial constraints, thus decreasing the number of investments and potentially affecting the probability of success. All variables used in the analyses are listed in Table 1.

Table 1: Variable definitions

Variable	Definition
Campaign outcome	
Success	Dummy variable that equals one, if the minimum target amount is reached, and zero otherwise
Percentage raised	The total amount raised divided by the minimum target amount
Amount raised	The amount of funding raised (in €)
Number of investments	Number of investments in the campaign
Limited attention	
Video	Dummy variable that equals one, if the campaign pitch includes a video, and zero otherwise
Graphic growth	Dummy variable that equals one, if the campaign pitch includes a graphic representation – a bar chart or a line graph – of realized or forecasted growth of the business, and zero otherwise
Salient team information	Dummy variable that equals one, if the campaign pitch includes pictures and links to LinkedIn profiles of at least half of the team, and zero otherwise
Text difficulty	A numeric measure of the campaign description readability based on the Dale-Chall readability formula
Control variables	
Team size	Number of team members presented
Advisor	Dummy variable that equals one, if the venture has at least one advisor in the team, and zero otherwise
Minimum equity	Percentage of equity offered for the minimum funding target
Angel/VC backing	Dummy variable that equals one, if the project is backed by a business angel or venture capitalist, and zero otherwise
Patent	Dummy variable that equals one if the campaign pitch mentions that the venture has at least one patent granted or pending, and zero otherwise
Support	Dummy variable that equals one, if the venture is a sports club, a culture project, or a brewery or distillery, and zero otherwise
Minimum target	The minimum funding target set by the venture (in €)
Minimum investment	The minimum investment required to participate in the round (in €)

4.2.4. Descriptive statistics

Table 2 presents summary statistics on the sample. In total, 46% of the campaigns are successful. *Percentage raised* ranges from 0 to 1,008%, and the average is 106%. Variation in the amount raised is also substantial. While the average campaign raises €171,082, the most successful campaign raised over €1.2 million. The average number of investments per campaign is 101, while the most popular campaign attracted 1743 investments.

Out of all the campaign pitches in the sample, 53% include a video, while only 20% have a graphic representation of growth. In total, 59% of the campaigns have included pictures of the team members and links to their LinkedIn profiles. The average text difficulty of the campaign description is 8.58, which is easily understood by an average 11th or 12th-grade student (typically aged 13 to 15) in the US. The easiest text with a Dale-Chall reading score of 7.20 is understood by a twelve-year-old, while the most difficult description with a score of 10.16 is understood by college students.

Table 2: Summary statistics

This table presents the summary statistics of the variables used. The sample ranges from 2012 to May 2017, covering 147 equity crowdfunding campaigns, of which 18 are available only in Finnish and thus inadmissible for readability analysis. See Table 1 for variable definitions.

Variable	Mean	Median	Standard deviation	Min	Max
Campaign outcome					
Success	0.46	0	0.50	0	1
Percentage raised	1.06	0.64	1.33	0	10.08
Amount raised	171,082	64,449	163,103	0	1,224,210
Number of investments	101.41	24	216.12	0	1743
Limited attention					
Video	0.53	1	0.50	0	1
Graphic growth	0.20	0	0.40	0	1
Salient team information	0.59	1	0.49	0	1
Text difficulty	8.58	8.51	0.60	7.20	10.16
Control variables					
Team size	5.51	5	2.77	1	15
Advisor	0.41	0	0.49	0	1
Minimum equity	0.10	0.06	0.12	0.0041	0.75
Angel/VC backing	0.13	0	.34	0	1
Patent	0.12	0	0.33	0	1
Support	0.10	0	0.30	0	1
Minimum target	168,464	100,000	175,554	20,000	964,390
Minimum investment	377.37	250	665.46	20	7,500

Table 3: Campaigns by field of business and development stage

This table presents the division of campaigns by field of business and development stage. Stages are listed in an increasing order of development from left to right. The sample ranges from 2012 to May 2017, covering 147 equity crowdfunding campaigns. See Table 1 for variable definitions.

	Development stage			
Field of business	Seed	Early	Growth	**Total**
Art and Design	1	-	-	**1**
Consumer products	7	3	-	**10**
E-Commerce	-	-	1	**1**
Education	2	-	1	**3**
Environmental and Ethical	4	1	-	**5**
Film, TV and Theatre	2	-	-	**2**
Food and Drink	13	2	2	**17**
Health & Fitness	5	2	2	**9**
Internet Business	9	2	1	**12**
IT and Telecommunications	7	2	2	**11**
Leisure and Tourism	2	-	-	**2**
Manufacturing	1	-	1	**2**
Media and Creative services	5	-	2	**7**
Other	8	1	3	**12**
Professional and Business Services	3	2	2	**7**
Retail	2	-	1	**3**
Sport and Leisure	4	2	4	**10**
Technology	27	6	-	**33**
Total	**102**	**23**	**22**	**147**

Table 3 shows that the most common fields of business in the sample are *Technology*, *Food and Drink*, *Internet Business*, and *Other*. At the same time, many fields are represented by just one or two campaigns. It is evident that most of the campaigns are in in the least developed *Seed* stage. Tables 4 and 5 give a more detailed view on how the campaign outcomes vary by field and stage.

Table 4: Average campaign outcomes by field of business

This table summarizes the campaign outcomes by field of business. The sample ranges from 2012 to May 2017, covering 147 equity crowdfunding campaigns. See Table 1 for variable definitions.

Field of business	Number of campaigns	Success rate	Percentage raised	Amount raised	Number of investments
Art and Design	1	1.00	1.58	79,200	39
Consumer products	10	0.52	1.25	90,352	51
E-Commerce	1	0.00	0.36	95,651	9
Education	3	0.33	1.85	419,669	227
Environmental and Ethical	5	0.40	0.59	65,138	52
Film, TV and Theatre	2	0.50	2.70	134,800	213
Food and Drink	17	0.41	0.98	183,529	119
Health & Fitness	9	0.67	1.08	85,775	55
Internet Business	12	0.33	0.56	91,144	35
IT and Telecommunications	11	0.45	1.14	152,818	44
Leisure and Tourism	2	0.50	0.99	421,406	206
Manufacturing	2	0.00	0.57	175,752	51
Media and Creative services	7	0.29	0.74	99,700	262
Other	12	0.58	1.47	182,427	64
Professional and Business Services	7	0.86	1.74	578,034	169
Retail	3	0.33	0.59	25,741	7
Sport and Leisure	10	0.60	1.18	307,376	404
Technology	33	0.39	0.91	129,429	37
Mean	**8**	**0.46**	**1.06**	**171,082**	**101**

Table 4 depicts the average campaign outcomes by field of business. Notably, companies in the most common fields are rather representative of the whole sample. At the same time, some fields are represented by only one or two campaigns, which makes inference on the effect of the business area difficult.

Table 5: Average campaign outcomes by development stage

This table summarizes the campaign outcomes by development stage. Stages are listed in an increasing order of development. The sample ranges from 2012 to May 2017, covering 147 equity crowdfunding campaigns. See Table 1 for variable definitions.

Development stage	Number of campaigns	Success rate	Percentage raised	Amount raised	Number of investments
Seed	102	0.34	0.81	92,440	47
Early	23	0.74	1.40	228,818	92
Growth	22	0.77	1.88	475,336	362
Mean	**49**	**0.46**	**1.06**	**171,082**	**101**

Table 5 presents the average campaign outcomes by development stage. A clear pattern is visible: the more developed the company, the higher the likelihood of success, the percentage raised, the absolute amount raised, and the number of investments.

4.3. Methods

For a preliminary view on how the data are related, I run univariate analyses. First, I calculate the correlation matrix and Variance Inflation Factors (VIF). Second, the difference in means between successful and unsuccessful campaigns is tested. As the influencing mechanics are undoubtedly more complex than what the univariate analysis can account for, regression analysis is required to validate the results.

As *Success* is a binary variable, it is analyzed with logit regression, following earlier studies (Ralcheva and Roosenboom, 2016; Vulkan et al., 2016). For easier interpretation, I report the average marginal effects of the independent variables on the probability of success. Essentially, average marginal effects are calculated by comparing two hypothetical populations, in which all other variables are identical except the one studied. The marginal effect can then be interpreted as the relation of a one-unit change in the explanatory variable and a percentage-point change in the probability of success.

The percentage raised is limited to zero and heavily right-skewed, as depicted in Appendix B. Moreover, interpreting the regression results after a logarithmic transformation would be difficult, as the dependent variable is in percentage points. Thus, I run a quantile regression on the percentage raised. Whereas an OLS regression models the mean, I use quantile regression to model the median. The median can be viewed as a better measure of central tendency if the distribution is skewed.

As a complementary analysis to study the percentage raised, I run an ordered logit regression. For the analysis, the sample is arbitrarily divided into four somewhat equal-sized group by the percentage raised. The cut points are: below 25%, below 100%, below 150%, and 150% or above. For easier interpretation, the odds ratios are reported. An odds ratio of x implies that a one-unit increase in the explanatory variable is associated with x-1 times greater odds of being in the highest percentage category versus the combined other percentage categories. Notably,

the ordered logit regression implicitly assumes that the odds are proportional (i.e., it is the same to move from below 25% to the next category as moving from below 100% to above 100%). Obviously, this is not the case in the "all or nothing" model, in which 100% is the most important cut point defining whether the round goes through or not. An approximate likelihood-ratio test of proportionality of odds across categories empirically shows that the odds are not proportional. Thus, the results must be interpreted with caution.

Like *Percentage raised*, the absolute amount of funding is highly skewed to the right with a long tail, as seen in Appendix B. However, the interpretation of the logarithm is clear. As the target amount varies by campaign, relative changes in the amount raised are more interesting than absolute ones. Thus, I run an OLS regression on the logarithmic transformation of the amount invested, in line with Lukkarinen et al. (2016). To include observations with zero investments, one unit is added to each value before the logarithmic transformation.

Finally, following earlier studies, I run a negative binomial regression for the number of investors, as the dependent variable is a discrete count with a variance significantly larger than the mean (Ralcheva and Roosenboom, 2016; Vismara, 2016b). To test for the validity of the regression model, I use the Bayesian Information Criterion (BIC) (Schwarz, 1978), the Akaike Information Criterion (AIC) (Akaike, 1974), and the Vuong test (Vuong, 1989). BIC and AIC both support the use of negative binomial regression over Poisson regression and zero-inflated models, while the Vuong test prefers the zero-inflated binomial regression.

All t and z-values in the regressions are corrected for heteroskedasticity in the data (White, 1980). Also, as Table 5 indicates that campaign outcome is affected by the venture's development stage, all regressions are run with stage fixed effects. However, campaign outcomes do not vary significantly by field of business, as evident in Table 4. Thus, field fixed effects are not included in the analyses. Finally, the regressions are run using natural logarithms of the minimum funding target and the minimum investment to reduce the effect of skewness in these variables. One unit is added to each value before the logarithmic transformation to include observations with a value of zero.

Next section reviews the univariate results and the regression analyses on *Success*. Results on *Percentage raised*, *Amount raised*, and *Number of investments* are reported as robustness checks in Section 6.

5. Results

5.1. Univariate analysis

For a preliminary view of the data, this section presents the results of the univariate analyses. Table 6 reports the pairwise correlation matrix and the Variance Inflation Factors (VIF) of the explanatory variables. As expected, the measures of limited attention are significantly correlated with various measures of success. In addition, *Team size, Angel/VC backing*, and *Support* are significantly correlated with some measures of success. Notably, the correlation of *Support* with *Number of investments* is extremely high, 0.51. The high correlation suggests that support campaigns attract significantly more investments than other campaigns, validating the use of *Support* as a control variable.

Interestingly, *Minimum equity* has a significant negative correlation with *Percentage raised*, but not with other measures of success. The direction is expected, as a greater value of *Minimum equity* implies lower equity retention. In addition, the minimum funding target is positively associated with the amount raised and the number of investments.

Notably, the measures of limited attention are significantly correlated with one another. To test for multicollinearity, I calculate the VIF for each explanatory variable. VIF is a widely used measure of multicollinearity, and a value of 10 is often used as a threshold for severe multicollinearity (O'brien, 2007). In this sample, VIF scores range from 1.11 to 1.70, suggesting there is no significant problem with multicollinearity.

Table 6: Correlation matrix and VIF scores

This table presents the correlation matrix and Variance Inflation Factors (VIF). * denotes statistical significance at the 5% level. The sample ranges from 2012 to May 2017, covering 147 equity crowdfunding campaigns, of which 18 are available only in Finnish and thus inadmissible for readability analysis. *ln* stands for natural logarithm. See Table 1 for variable definitions.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	VIF
1 Success	1.00																
2 Percentage raised	0.65*	1.00															
3 ln Amount raised	0.59*	0.50*	1.00														
4 Number of investments	0.42*	0.38*	0.39*	1.00													
5 Video	0.28*	0.20*	0.38*	0.23*	1.00												1.32
6 Graphic growth	0.32*	0.31*	0.31*	0.06	0.23*	1.00											1.27
7 Salient team information	0.31*	0.26*	0.41*	0.27*	0.47*	0.31*	1.00										1.70
8 Text difficulty	-0.39*	-0.32*	-0.26*	-0.33*	-0.22*	-0.22*	-0.33*	1.00									1.23
9 Team size	0.23*	0.14	0.18*	0.18*	0.24*	0.11	0.23*	-0.05	1.00								1.41
10 Advisor	0.05	0.03	0.05	-0.04	0.14	0.11	0.27*	0.06	0.45*	1.00							1.61
11 Minimum equity	-0.06	-0.16*	0.08	0.00	-0.12	-0.09	-0.02	-0.04	-0.17*	-0.11	1.00						1.24
12 Angel/VC backing	0.17*	0.14	0.20*	0.05	0.16	0.11	0.28*	-0.14	0.13	0.26*	-0.14	1.00					1.16
13 Patent	0.11	0.05	0.16	-0.03	0.19*	-0.03	0.23*	-0.05	0.16*	0.32*	-0.03	0.23*	1.00				1.21
14 Support	0.18*	0.16*	0.18*	0.51*	0.00	-0.11	0.10	-0.13	-0.04	-0.19*	0.18*	-0.06	-0.13	1.00			1.11
15 ln Minimum funding target	0.05	-0.05	0.44*	0.28*	0.20*	0.16	0.35*	-0.09	0.23*	0.18*	0.30*	0.07	0.13	0.11	1.00		1.37
16 ln Minimum investment	0.10	0.12	0.02	-0.08	0.07	0.12	0.04	0.11	0.19*	0.24*	-0.06	0.06	0.04	-0.05	0.03	1.00	1.13

Table 7 reports the difference in means between successful and unsuccessful campaigns. On average, successful campaigns raise 197% of the target amount, while unsuccessful ones receive only 25%. Similarly, successful campaigns raise on average €310,253, whereas unsuccessful campaigns raise €47,970. The difference in the number of investments is substantial too. On average, successful campaigns attract 197 investments compared to 18 investments in unsuccessful ones.

The difference-in-means analysis supports all three hypotheses. All four measures of limited attention turn out significant. Successful campaigns are more likely to have a video and a graphic representation of growth in their pitch than unsuccessful ones. Indeed, 68% of the successful campaigns include a video, and 33% a graphic representation of growth, whereas the figures for unsuccessful campaigns are 40% and merely 8%, respectively. Also, successful campaigns are more likely to include salient information on the founding team: 75% of successful campaigns include team members' pictures and LinkedIn profile links, while only 45% of unsuccessful campaigns do so. Finally, on average, the description of a successful campaign is easier to read than that of an unsuccessful campaign. The average description of a successful campaign is roughly 0.5 points easier (corresponding to one year less education required to understand) than the average unsuccessful campaign pitch. In addition, three control variables are significant. Successful campaigns have on average more team members and are more likely to be backed by an angel or venture capital investor than unsuccessful ones. Also, successful campaigns are more likely to be support-type.

Table 7: Difference in means between successful and unsuccessful campaigns

This table presents the difference in means between successful and unsuccessful campaigns. ***, ** and * denote statistical significance at the 1%, 5% and 10% level, respectively. The sample ranges from 2012 to May 2017, covering 147 equity crowdfunding campaigns, of which 18 are available only in Finnish and thus inadmissible for readability analysis. See Table 1 for variable definitions.

	Successful (mean)	Unsuccessful (mean)	Difference test (successful vs. unsuccessful)
Campaign outcomes			
Percentage raised	1.97	0.25	1.72***
Amount raised	310,252.7	47,970.3	262,282.4***
Number of investments	197.13	17.73	180.40***
Limited attention variables			
Video	0.68	0.40	0.28***
Graphic growth	0.33	0.08	0.25***
Salient team information	0.75	0.45	0.30***
Text difficulty	8.33	8.80	-0.47***
Control variables			
Team size	6.19	4.91	1.28***
Advisor	0.43	0.38	0.05
Minimum equity	0.09	0.11	-0.02
Angel/VC backing	0.19	0.08	0.11**
Patent	0.16	0.09	0.07
Support	0.16	0.05	0.09**
Minimum funding target	182,287.6	156,235.0	26,052.6
Minimum investment	337.15	412.95	-75.80

5.2. Regression analysis

As the univariate results are merely illustrative, this section presents the results of a more detailed analysis of the relation between the measures of limited attention and the probability of success. Table 8 reports the average marginal effects and heteroskedasticity-consistent z-values of the logistic regressions on *Success*. All measures of limited attention are tested one by one, and then jointly. The results support all hypotheses, suggesting that limited investor attention has significant consequences on equity crowdfunding campaign success. Just altering the form of information can improve the probability of success.

First, including an attention-grabbing element is associated with a higher likelihood of success. All else equal, the results suggest that adding a video to the campaign pitch improves the probability of success by 17.9 percentage points. Similarly, graphically presenting growth

increases the likelihood of success by 17.9 percentage points. The evidence for Hypothesis 2 is not as strong. Including salient team information, i.e., team's pictures and LinkedIn profile links, is associated with a higher likelihood of success, but the statistical significance diminishes with the inclusion of other limited attention variables in the model. The lack of significance might be caused by the small number of observations and the correlation between the measures of limited attention. Nevertheless, the results tentatively suggest that presenting the team saliently is associated with an increase of 19.2 percentage points in the likelihood of success. Finally, supporting Hypothesis 3, a one-unit increase in the text difficulty – which corresponds to two years more education required to understand the text – is associated with a decrease of 19.8 percentage points in the probability of campaign success.

Importantly, the exact magnitude of the marginal effects should be interpreted with caution. As mentioned earlier, the results may suffer from endogeneity, and no conclusions on causality can be made. Especially the cumulative effects of including various attention-grabbing elements and salient team information are unlikely accurate. Moreover, I expect the marginal utility of simplifying the text to decrease rather quickly. Oversimplifying will presumably have even negative consequences.

My findings support Kahneman's (1973) theory of attention and the proposals of Hirshleifer and Teoh (2003), and are in line with results from existing research on limited attention in finance. First, including attention-grabbing elements is positively associated with campaign success, and thus seems to influence investors' decision-making. This result also supports the attention hypothesis of Barber and Odean (2008), implying that increased attention on a security is associated with increased buying pressure. Humans do not make (investment) decisions among all the possible alternatives, but rather choose from the ones that have caught their attention.

Second, I find that saliency of the information on the founding team is positively associated with campaign success. In accordance with the framework of Hirshleifer and Teoh (2003), this result suggests that information in a salient and easily accessible format is better received by investors than unnoticeable material. Notably, as discussed in the methodology section, team pictures could also function as attention grabbers.

Third, understandability of information seems to influence the readers, in this case increasing the probability of funding success. This result is consistent with Hirshleifer and Teoh (2003) and studies on financial disclosures, which show that better readability is associated with a greater likelihood for readers to invest (Lawrence, 2013), and stronger investor reactions (Rennekamp, 2012). Moreover, this finding gives empirical support to the survey results of Lukkarinen (2017), who reports that the most important investment criterion in equity crowdfunding is clarity of what the company does.

In line with previous results on crowdfunding, the number of team members, which is used as a proxy for human capital, is positively associated with the likelihood of success. One explanation could be that ventures lead by large teams are viewed as more credible than 'one-man shops'. Alternatively, the team size could even be linked to investor attention: a long list of team members presumably grabs more attention than a couple of names.

In addition to the team size, the coefficient of the funding target is significant. A larger target amount is associated with a decreased probability of success. The result is expected, as a larger target is inherently more difficult to reach than a small amount. Notably, the likelihood of success significantly increases with the company's stage of development. This implies that investors value traction; more developed companies can be viewed as less uncertain investments than those with no realized sales. Also, more developed companies may be better-known than newly founded ventures, and can thus be deemed more attractive investment targets.

A novel finding is that support campaigns, namely breweries and distilleries, sports clubs, and culture projects, are more likely to be successful. However, the significance of this relation diminishes when all the limited attention variables are included. For future research, this finding highlights the importance of investor motives to invest in different projects. If the primary motivation to invest in a project is altruistic, the significance of financial factors is prone to decrease.

Somewhat surprisingly, I find no significant relation between having an advisor in the team and the probability success. Also, equity retention, angel or venture capitalist backing, and intellectual property protection in the form of patents have no significant effect on success.

Though, it must be noted that the results are not completely unexpected: the current literature has yet to form a consensus on what factors explain equity crowdfunding success.

With such small sample sizes and different data sources in the existing studies, it is difficult to draw conclusions on what else could explain the differences in findings concerning the control variables. However, in relation to previous studies, this thesis does not report contradictory results, but rather lacks significance for some variables that have been found significant before. In the future, better data availability will hopefully enable more granular research and shed more light on the reasons behind the different findings.

Table 8: Logit regression on Success

This table presents the marginal effects and heteroskedasticity-consistent z-values (in parentheses) of the logit regression analyses. The dependent variable in all models is *Success*. ***, ** and * denote statistical significance at the 1%, 5% and 10% level, respectively. The sample ranges from 2012 to May 2017, covering 147 equity crowdfunding campaigns, of which 18 are available only in Finnish and thus inadmissible for readability analysis. *ln* stands for natural logarithm. See Table 1 for variable definitions.

	Model 1: Success	Model 2: Success	Model 3: Success	Model 4: Success	Model 5: Success	Model 6: Success
Limited attention variables						
Video		0.213***				0.179**
		(2.70)				(2.44)
Graphic growth			0.269***			0.179**
			(3.06)			(2.22)
Salient team information				0.330***		0.192
				(3.23)		(1.49)
Text difficulty					-0.255***	-0.198***
					(-4.07)	(-3.09)
Control variables						
Team size	0.044***	0.038***	0.044***	0.043***	0.035***	0.029**
	(3.35)	(3.06)	(3.48)	(3.42)	(2.64)	(2.52)
Advisor	-0.051	-0.032	-0.059	-0.081	0.026	0.023
	(-0.61)	(-0.39)	(-0.76)	(-1.02)	(0.31)	(0.29)
Minimum equity	0.245	0.332	0.376	0.332	-0.119	0.217
	(0.79)	(1.09)	(1.27)	(1.12)	(-0.20)	(0.55)
Angel/VC backing	0.141	0.118	0.127	0.129	0.086	0.070
	(1.26)	(1.04)	(1.13)	(1.23)	(0.80)	(0.73)
Patent	0.107	0.071	0.154	0.060	0.090	0.070
	(0.93)	(0.62)	(1.46)	(0.56)	(0.82)	(0.65)
Support	0.303**	0.303**	0.333***	0.250**	0.276	0.310
	(2.47)	(2.15)	(2.76)	(2.10)	(1.61)	(1.32)
ln Minimum funding target	-0.097**	-0.098**	-0.107**	-0.118**	-0.128***	-0.145***
	(-1.99)	(-2.11)	(-2.22)	(-2.46)	(-2.62)	(-3.12)
ln Minimum investment	0.007	0.004	0.001	0.021	0.011	0.007
	(0.19)	(0.13)	(0.02)	(0.58)	(0.21)	(0.17)
Stage = Early	0.447***	0.432***	0.366***	0.440***	0.354***	0.278**
	(4.59)	(4.28)	(3.63)	(4.29)	(3.11)	(2.43)
Stage = Growth	0.480***	0.491***	0.427***	0.510***	0.422***	0.411***
	(5.30)	(5.76)	(3.82)	(6.67)	(4.25)	(4.16)
Year fixed effects	Y	Y	Y	Y	Y	Y
Number of campaigns	147	147	147	147	129	129
Wald Chi sq.	42.04***	39.00***	46.44***	44.89***	45.82***	58.09***
Pseudo R sq.	0.2519	0.2849	0.2893	0.2986	0.3129	0.3972

6. Robustness checks

In this section, I show that the results are robust to using alternative measures of success. Also, I control for the numerical growth forecast to show that merely the inclusion of a growth graph is significantly associated with the campaign success probability. Finally, I show that the effect of campaign text readability holds with another popular readability index.

6.1. Alternative measures of success

On the Invesdor platform, campaigns can be overfunded. In addition to the minimum target, the companies set a maximum target amount, which is on average double the minimum target. Naturally, a campaign receiving double the amount sought can be viewed more successful than one receiving 100%. Following other studies, I also measure success as the percentage of the target funded (Ahlers et al., 2015; Ralcheva and Roosenboom, 2016; Vismara, 2016a, 2016b).

A campaign receiving a million euros can be viewed as more successful than one receiving a hundred thousand euros, though both might have equally reached 100% of their target. Therefore, the absolute amount of funding raised is also measured, as in Lukkarinen et al. (2016).

Finally, in addition to raising funds, crowdfunding is used to increase awareness. The number of investors can be seen as a proxy for the awareness reached and is therefore used as a measure of campaign success, in line with other studies (Ahlers et al., 2015; Lukkarinen et al., 2016; Ralcheva and Roosenboom, 2016; Vismara, 2016a, 2016b).

Table 9 presents the results of the median regressions on *Percentage raised.* The results support all three hypotheses and are in line with the main results in Table 8. First, including a video in the pitch is associated with a 51-percentage-point, and presenting growth graphically with a 29-percentage-point increase in *Percentage raised,* respectively. Second, including team members' pictures and LinkedIn profile links is related to a 37-percentage-point increase in the percentage of target reached. Finally, a one-unit increase in the text difficulty is associated with a 22-percentage-point decrease in *Percentage raised*. Economically, especially when cumulated, the coefficients seem rather large. However, the relations are undoubtedly nonlinear and highly dependent on the target amount.

There is a weakly significant positive relation between the number of team members and the percentage of target funded. Similarly, support campaigns seem to reach a higher percentage than other campaigns. Companies in early and growth stages, on average, raise a higher percentage of their target than seed-stage companies. Finally, a higher funding target is negatively associated with the percentage raised, as expected.

In accordance with the quantile regression results, the ordered logit regression analysis results in Table 10 support Hypotheses 1 and 2, and give tentative evidence for Hypothesis 3. Campaigns with a video in the pitch are 3.6 times as likely as other campaigns to be in the top percentage category, i.e., raise at least 150% of the initial funding target. Also, ventures that include a graphic representation of growth in the campaign pitch are 2.7 times as likely as other campaigns to raise at least 150% of their target. Campaigns that include the team's pictures and LinkedIn links are 3.9 times as likely as other campaigns to be in the top percentage category. Additionally, the results tentatively suggest that a one-unit increase in text difficulty is associated with a 37% lower likelihood of raising at least 150% of the target. The statistical significance of this relation diminishes when all the measures of limited attention are included in the regression.

As expected, the control variables in the ordered logit regression show similar results as in the median regression. Team size is positively associated with the percentage raised. Also, a higher funding target is negatively associated with the percentage raised. Finally, campaigns in more advanced development stages are significantly more likely to be in the top percentage category.

Importantly, as mentioned in the methodology section, the ordered logit regression implicitly assumes that the odds are proportional. Undoubtedly, going up from 90 to 100% is different from going from 20 to 30%. Thus, these results should be considered directional at best.

Table 9: Quantile (median) regression on Percentage raised

This table presents the coefficients and heteroskedasticity-consistent t-values (in parentheses) of the quantile regression analyses. The dependent variable in all models is *Percentage raised*. ***, ** and * denote statistical significance at the 1%, 5% and 10% level, respectively. The sample ranges from 2012 to May 2017, covering 147 equity crowdfunding campaigns, of which 18 are available only in Finnish and thus inadmissible for readability analysis. *ln* stands for natural logarithm. See Table 1 for variable definitions.

	Model 1: Percentage raised	Model 2: Percentage raised	Model 3: Percentage raised	Model 4: Percentage raised	Model 5: Percentage raised	Model 6: Percentage raised
Limited attention variables						
Video		0.630***				0.513***
		(5.01)				(4.06)
Graphic growth			0.612***			0.292**
			(3.54)			(2.23)
Salient team information				0.500**		0.369**
				(2.49)		(2.28)
Text difficulty					-0.251*	-0.222**
					(-1.97)	(-2.45)
Control variables						
Team size	0.048	0.059**	0.073***	0.066**	0.024	0.045*
	(1.60)	(2.59)	(2.65)	(2.41)	(0.61)	(1.69)
Advisor	-0.002	-0.081	-0.108	0.012	0.074	0.123
	(-0.01)	(-0.81)	(-0.72)	(0.08)	(0.38)	(0.76)
Minimum equity	0.142	0.187	0.185	0.281	0.235	0.196
	(0.24)	(0.62)	(0.32)	(1.16)	(0.10)	(0.47)
Angel/VC backing	0.112	0.281*	0.186	0.192	0.118	0.119
	(0.41)	(1.71)	(0.90)	(1.18)	(0.48)	(0.97)
Patent	0.398**	0.180	0.319**	0.313*	0.227	0.079
	(2.37)	(1.34)	(2.33)	(1.96)	(1.12)	(0.54)
Support	0.543	0.290	1.071***	0.766***	0.944***	1.215*
	(1.59)	(0.63)	(2.99)	(2.97)	(2.71)	(1.75)
ln Minimum funding target	-0.150**	-0.139***	-0.141**	-0.164**	-0.191*	-0.161**
	(-2.22)	(-2.74)	(-2.06)	(-2.32)	(-1.98)	(-2.02)
ln Minimum investment	-0.035	-0.033	-0.038	-0.058	-0.045	-0.028
	(-0.78)	(-0.68)	(-0.75)	(-1.52)	(-0.40)	(-0.31)
Stage = Early	0.701***	0.575***	0.568***	0.613***	0.769***	0.605***
	(3.64)	(4.00)	(3.89)	(3.64)	(3.68)	(5.09)
Stage = Growth	0.924***	0.859***	0.338	0.858***	0.936***	0.629***
	(3.00)	(4.45)	(1.47)	(3.57)	(3.01)	(2.95)
Year fixed effects	Y	Y	Y	Y	Y	Y
Constant	1.737**	1.650**	1.670*	1.937**	4.447***	3.763***
	(2.08)	(2.53)	(1.95)	(2.22)	(3.35)	(3.24)
Number of campaigns	147	147	147	147	129	129
Pseudo R sq.	0.2226	0.2591	0.2374	0.2372	0.2347	0.2970

Table 10: Ordered logit regression on Percentage category

This table presents the odds ratios and heteroskedasticity-consistent z-values (in parentheses) of the ordered logit regression analyses. The dependent variable in all models is the percentage category. There are four categories, and the cut points are: below 25%, below 100%, below 150%, and 150% or above. ***, ** and * denote statistical significance at the 1%, 5% and 10% level, respectively. The sample ranges from 2012 to May 2017, covering 147 equity crowdfunding campaigns, of which 18 are available only in Finnish and thus inadmissible for readability analysis. *ln* stands for natural logarithm. See Table 1 for variable definitions.

	Model 1: Percentage category	Model 2: Percentage category	Model 3: Percentage category	Model 4: Percentage category	Model 5: Percentage category	Model 6: Percentage category
Limited attention variables						
Video		3.323**				3.607**
		(2.33)				(2.34)
Graphic growth			3.444***			2.742**
			(3.49)			(2.54)
Salient team information				4.463***		3.877**
				(2.73)		(2.28)
Text difficulty					0.497**	0.630
					(-2.17)	(-1.37)
Control variables						
Team size	1.186**	1.170**	1.197***	1.200**	1.153*	1.169*
	(2.51)	(2.18)	(2.58)	(2.55)	(1.93)	(1.79)
Advisor	1.077	1.154	1.059	1.095	1.330	1.367
	(0.19)	(0.37)	(0.15)	(0.24)	(0.68)	(0.73)
Minimum equity	0.997	1.833	1.050	1.284	0.764	4.127
	(-0.00)	(0.53)	(0.03)	(0.20)	(-0.13)	(0.66)
Angel/VC backing	1.472	1.631	1.455	1.236	1.270	1.349
	(0.96)	(1.12)	(0.90)	(0.55)	(0.59)	(0.71)
Patent	1.982	1.622	2.311*	1.678	1.811	1.495
	(1.55)	(1.06)	(1.94)	(1.15)	(1.36)	(0.85)
Support	4.647**	4.821**	5.797***	3.792**	4.487	4.964
	(2.43)	(2.34)	(2.64)	(2.23)	(1.24)	(1.32)
ln Minimum funding target	0.618**	0.608**	0.612**	0.577**	0.582**	0.510***
	(-2.22)	(-2.28)	(-2.29)	(-2.48)	(-2.24)	(-2.77)
ln Minimum investment	0.763	0.769	0.749	0.830	0.675	0.711
	(-0.98)	(-0.92)	(-1.06)	(-0.64)	(-1.16)	(-0.95)
Stage = Early	4.604***	5.167***	3.637***	4.700***	4.400***	5.068***
	(4.13)	(4.23)	(3.42)	(3.99)	(3.37)	(3.42)
Stage = Growth	8.741***	10.655***	6.166***	10.811***	8.413***	10.826***
	(4.33)	(4.60)	(3.38)	(4.82)	(3.89)	(4.16)
Year fixed effects	Y	Y	Y	Y	Y	Y
Number of campaigns	147	147	147	147	129	129
Wald Chi sq.	65.96***	67.67***	69.38***	70.55***	55.71***	76.46***
Pseudo R sq.	0.1396	0.1582	0.1592	0.1594	0.1422	0.1989

The results of the OLS regressions on the *ln Amount raised* are reported in Table 11. The findings are in line with Hypotheses 1 and 2, but not with Hypothesis 3. Supporting Hypothesis 1, the inclusion of a video is associated with a 145%, and a graphic representation of growth with a 93% increase in the amount raised. Also, the results provide tentative evidence for Hypothesis 2. The inclusion of salient team information is associated with a greater amount raised, though the statistical significance of the relation diminishes when running the analysis with all measures of limited attention. However, Hypothesis 3 is not supported. Though the relation between text difficulty and the amount raised is of the expected direction, it is not statistically significant.

Ventures with angel investor or venture capital backing raise on average more funding than campaigns without professional funding. Also, support-type campaigns seem to raise more money than other campaigns, on average. The minimum funding target is a positive determinant of the amount raised. Increasing the funding target by 1% is associated with a 0.5% increase in the amount raised. Finally, the significant coefficients of early and growth stage dummies indicate that the amount raised increases with the company's development stage.

Table 12 reports the results of the negative binomial regressions on *Number of investments*. The findings tentatively support all three hypotheses. Individually, all variables of interest are significant and of the right direction. However, when including all measures of limited attention in the same regression, only text readability remains statistically significant.

The number of team members is positively associated with the number of investments. Additionally, the minimum funding target is a positive determinant of the number of investments. A greater amount is likely to be funded by a larger number of investments than a small amount. As expected, the minimum investment is negatively associated with the number of investments. A large minimum investment may drive away investors with financial constraints. It also decreases the required number of investments to reach the funding target. Notably, the coefficient of *Support* is significant and extremely large compared to other independent variables.

Table 11: OLS regression on ln Amount raised

This table presents the coefficients and heteroskedasticity-consistent t-values (in parentheses) of the OLS regression analyses. The dependent variable in all models is the logarithm of *Amount raised*. ***, ** and * denote statistical significance at the 1%, 5% and 10% level, respectively. The sample ranges from 2012 to May 2017, covering 147 equity crowdfunding campaigns, of which 18 are available only in Finnish and thus inadmissible for readability analysis. *ln* stands for natural logarithm. See Table 1 for variable definitions.

	Model 1: ln Amount raised	Model 2: ln Amount raised	Model 3: ln Amount raised	Model 4: ln Amount raised	Model 5 ln Amount raised	Model 6: ln Amount raised
Limited attention variables						
Video		1.426***				1.448**
		(2.63)				(2.56)
Graphic growth			1.197***			0.933**
			(3.42)			(2.29)
Salient team information				1.082**		0.861
				(2.02)		(1.58)
Text difficulty					-0.516	-0.238
					(-1.36)	(-0.64)
Control variables						
Team size	0.072	0.043	0.072	0.071	0.051	0.026
	(1.28)	(0.70)	(1.27)	(1.26)	(0.76)	(0.36)
Advisor	-0.515	-0.343	-0.566	-0.558	-0.438	-0.339
	(-0.89)	(-0.67)	(-0.99)	(-0.97)	(-0.66)	(-0.60)
Minimum equity	0.822	1.459	0.968	1.053	0.464	1.967
	(0.78)	(1.48)	(0.82)	(0.95)	(0.26)	(1.20)
Angel/VC backing	0.799**	0.816**	0.770**	0.706*	0.693*	0.676*
	(2.15)	(2.11)	(2.13)	(1.97)	(1.66)	(1.66)
Patent	0.774*	0.519	0.929**	0.637	0.742*	0.510
	(1.78)	(1.20)	(2.09)	(1.45)	(1.70)	(1.12)
Support	1.006**	1.052**	1.249***	0.855**	0.970	1.276*
	(2.46)	(2.46)	(2.87)	(2.24)	(1.52)	(1.84)
ln Minimum funding target	0.684***	0.677***	0.663***	0.637**	0.613**	0.535**
	(2.70)	(2.87)	(2.71)	(2.57)	(2.16)	(2.15)
ln Minimum investment	-0.210	-0.218	-0.235	-0.149	-0.275	-0.295
	(-0.47)	(-0.52)	(-0.54)	(-0.33)	(-0.50)	(-0.57)
Stage = Early	1.382***	1.406***	1.077***	1.317***	1.303***	1.161***
	(4.79)	(4.39)	(3.75)	(4.35)	(3.49)	(2.97)
Stage = Growth	1.439***	1.482***	1.057**	1.562***	1.519***	1.456***
	(3.15)	(3.42)	(2.21)	(3.77)	(2.90)	(3.11)
Year fixed effects	Y	Y	Y	Y	Y	Y
Constant	1.248	1.220	1.581	1.508	7.172	5.448
	(0.33)	(0.35)	(0.43)	(0.40)	(1.14)	(0.91)
Number of campaigns	147	147	147	147	129	129
Adjusted R sq.	0.2870	0.3328	0.3117	0.3008	0.2414	0.3220

Table 12: Negative binomial regression on Number of investments

This table presents the coefficients and heteroskedasticity-consistent z-values (in parentheses) of the negative binomial regression analyses. The dependent variable in all models is the number of investments. ***, ** and * denote statistical significance at the 1%, 5% and 10% level, respectively. The sample ranges from 2012 to May 2017, covering 147 equity crowdfunding campaigns, of which 18 are available only in Finnish and thus inadmissible for readability analysis. *ln* stands for natural logarithm. See Table 1 for variable definitions.

	Model 1: Number of investments	Model 2: Number of investments	Model 3: Number of investments	Model 4: Number of investments	Model 5: Number of investments	Model 6: Number of investments
Limited attention variables						
Video		0.422*				0.230
		(1.90)				(0.96)
Graphic growth			0.530***			0.283
			(2.83)			(1.47)
Salient team information				0.713**		0.374
				(2.36)		(1.21)
Text difficulty					-0.828***	-0.714***
					(-5.61)	(-4.43)
Control variables						
Team size	0.129***	0.125***	0.132***	0.134***	0.125***	0.124***
	(3.95)	(3.70)	(3.91)	(4.13)	(4.01)	(3.79)
Advisor	-0.028	0.066	-0.044	-0.119	0.021	-0.010
	(-0.13)	(0.31)	(-0.21)	(-0.57)	(0.10)	(-0.05)
Minimum equity	-1.185**	-0.894	-0.952	-0.806	-1.922**	-1.251
	(-2.14)	(-1.53)	(-1.51)	(-1.23)	(-1.96)	(-1.19)
Angel/VC backing	0.479*	0.436*	0.425*	0.448*	0.445*	0.376
	(1.90)	(1.79)	(1.71)	(1.75)	(1.73)	(1.47)
Patent	-0.045	-0.133	0.032	-0.139	-0.046	-0.095
	(-0.20)	(-0.60)	(0.14)	(-0.62)	(-0.21)	(-0.41)
Support	1.721***	1.774***	1.863***	1.516***	1.943***	1.992***
	(6.49)	(6.73)	(6.65)	(5.83)	(5.71)	(5.06)
ln Minimum funding target	0.275**	0.252**	0.268**	0.238**	0.227**	0.183*
	(2.56)	(2.33)	(2.49)	(2.27)	(2.35)	(1.84)
ln Minimum investment	-0.462***	-0.462***	-0.503***	-0.455***	-0.326*	-0.354*
	(-3.34)	(-3.34)	(-3.66)	(-3.33)	(-1.66)	(-1.78)
Stage = Early	0.697***	0.727***	0.601***	0.738***	0.519**	0.525**
	(3.29)	(3.55)	(2.83)	(3.15)	(2.44)	(2.39)
Stage = Growth	1.445***	1.494***	1.327***	1.473***	1.190***	1.236***
	(5.23)	(5.40)	(4.85)	(5.64)	(4.71)	(4.77)
Year fixed effects	Y	Y	Y	Y	Y	Y
Constant	0.815	1.052	1.028	1.169	8.176***	7.726***
	(0.58)	(0.74)	(0.73)	(0.85)	(4.63)	(4.20)
Number of campaigns	147	147	147	147	129	129
Wald Chi sq.	280.07***	266.34***	274.86***	297.29***	315.03***	310.41***
Pseudo R sq.	0.0924	0.0945	0.0957	0.0961	0.1043	0.1077

6.2. Controlling for growth forecast

A potential concern could be that only companies with an optimistic growth forecast decide to include a growth graph. To control for this, I run the logit regression in Table 8 while controlling for the numeric growth forecast. Many companies have no realized sales, and thus forecast infinite compounded annual growth rates. Also, some companies expect negative sales growth. For these reasons, I include the absolute 4-year sales growth forecast (defined as the forecasted sales in four years minus the reported current sales) as a control variable in the logit regression. The results are reported in Models 1 and 2 in Table 13. It is evident that the marginal effect of *Graphic growth* remains statistically significant and of equal magnitude even after controlling for the numerical 4-year growth forecast. Using the forecasted 4-year compounded annual growth rate (replacing all missing and infinite values with zeros to maintain a reasonable sample size) returns similar results.

6.3. Alternative measure of readability

In addition to the Dale-Chall readability formula, I run the logit regression on success with another widely-known measure of readability: the Flesch Reading Ease score (Flesch, 1948). It measures text difficulty with the average word count per sentence and the average syllable count per word. The score ranges from 0 to 100, 100 being the easiest. Therefore, a higher score should imply a greater likelihood of success. The regression results are reported in Models 3 and 4 in Table 13 and show that the coefficient of Flesch Reading Ease score is positive and significant, though not as strongly as the Dale-Chall score.

Table 13: Logit regression on Success with robustness checks

This table presents the average marginal effects and heteroskedasticity-consistent z-values (in parentheses) of the logit regression analyses. Models 1 and 2 study the significance of *Graphic growth* while controlling for growth forecast. Models 3 and 4 study the effect of using an alternative measure of readability. The dependent variable in all models is *Success*. ***, ** and * denote statistical significance at the 1%, 5% and 10% level, respectively. The sample ranges from 2012 to May 2017, covering 147 equity crowdfunding campaigns, of which 18 are available only in Finnish and thus inadmissible for readability analysis. *ln* stands for natural logarithm. See Table 1 for variable definitions.

	Model 1: Success	Model 2: Success	Model 3: Success	Model 4: Success
Limited attention variables				
Video		0.178**		0.199**
		(2.26)		(2.56)
Graphic growth	0.272***	0.179**		0.191**
	(3.02)	(2.19)		(2.18)
Salient team information		0.191		0.256*
		(1.44)		(1.91)
Text difficulty: Dale-Chall		-0.198***		
		(-3.04)		
Text readability: Flesch Reading Ease			0.009**	0.008*
			(2.27)	(1.92)
Control variables				
Team size	0.044***	0.029**	0.044***	0.038***
	(3.50)	(2.53)	(2.99)	(2.90)
Advisor	-0.062	0.022	-0.014	-0.017
	(-0.81)	(0.29)	(-0.16)	(-0.20)
Minimum equity	0.404	0.221	-0.237	0.126
	(1.36)	(0.56)	(-0.38)	(0.30)
Angel backing	0.126	0.070	0.113	0.081
	(1.11)	(0.73)	(1.00)	(0.79)
Patent	0.151	0.070	0.122	0.087
	(1.45)	(0.65)	(1.10)	(0.81)
Support	0.339***	0.310	0.276*	0.301
	(2.80)	(1.32)	(1.75)	(1.51)
ln Minimum funding target	-0.109**	-0.146***	-0.119**	-0.146***
	(-2.24)	(-3.11)	(-2.11)	(-2.84)
ln Minimum investment	0.001	0.007	-0.015	-0.008
	(0.04)	(0.18)	(-0.37)	(-0.21)
Forecasted 4-year sales growth	<0.001	<0.001		
	(0.53)	(0.08)		
Stage fixed effects	Y	Y	Y	Y
Year fixed effects	Y	Y	Y	Y
Number of campaigns	147	129	129	129
Wald Chi sq.	47.47***	58.24***	36.54***	50.11***
Pseudo R sq.	0.2903	0.3972	0.2553	0.3641

7. Conclusion

In this thesis, I study the effect of limited attention on equity crowdfunding success in a sample of 147 campaigns from the beginning of 2012 to May 2017 on Invesdor, one of the leading Nordic equity crowdfunding platforms. Drawing from Kahneman's (1973) theory of attention and applying the framework of Hirshleifer and Teoh (2003) in the crowdfunding context, I run logit regressions to test whether information saliency and understandability are associated with campaign success. A campaign is considered successful if it reaches the minimum funding target set by the fund-seeking venture, as otherwise the funds are returned to investors.

Supporting the implications of Hirshleifer and Teoh (2003), I find that better information saliency and understandability are positively associated with equity crowdfunding campaign success. The results are in line with studies of limited investor attention in other fields of finance.

First, I find that including salient elements that grab attention, namely a video and a graphic representation of growth, is positively associated with equity crowdfunding campaign success. Adding a video and a graphic growth figure both increase the probability of success by 18 percentage points.

Second, providing salient and easily accessible information on the founding team is positively associated with campaign success. My results tentatively suggest that including the team members' pictures and LinkedIn profile links increases the probability of campaign success by 19 percentage points. However, the statistical significance of this relation diminishes with the inclusion of other measures of limited attention. The lack of significance is most likely caused by high correlation of *Salient team information* with the other measures of limited attention.

Finally, I show that campaigns with more understandable descriptions are more likely to be successful than campaigns with complex descriptions. A decrease of one unit in the campaign text difficulty – i.e., two years less education required to comprehend the text – is associated with a 20-percentage-point increase in the probability of success.

Notably, the results are robust to the inclusion of previously identified determinants of equity crowdfunding campaign success, such as the team size, equity retention, development stage, patent, and funding from angel investors. Moreover, the results hold with various measures of

success. The other measures of success are the percentage of target funded, the absolute amount of funding raised, and the number of investments in the campaign.

It must be noted that the results of this thesis may suffer from endogeneity and reverse causality. Unobserved venture quality could explain the attention-grabbing and understandable campaign pitches, as well as the desirable campaign outcomes. One cannot conclude whether improved saliency and clarity of information affect funding success, or whether successful campaigns just have quality pitches. In addition, the sample consists of a limited number of campaigns in a single, Nordic platform. Investor characteristics, such as sophistication, may vary between platforms, which has implications on the generalization of the results.

The findings of this thesis have important implications for both the academia and practitioners. I present novel and unique evidence on the importance of limited investor attention in equity crowdfunding. More importantly, my results validate the use of crowdfunding campaigns as a completely new platform to study limited investor attention. Another suggestion for future research is the application of other concepts of behavioral finance in explaining equity crowdfunding success.

The main takeaway for practitioners is two-fold. First, fundraising companies can – and should – optimize campaign success by putting effort into grabbing investors' attention and providing information in a salient and understandable format. Second, also the regulation of equity crowdfunding should take limited investor attention into account. High-risk investments should not be made based on flashy, attention-grabbing figures.

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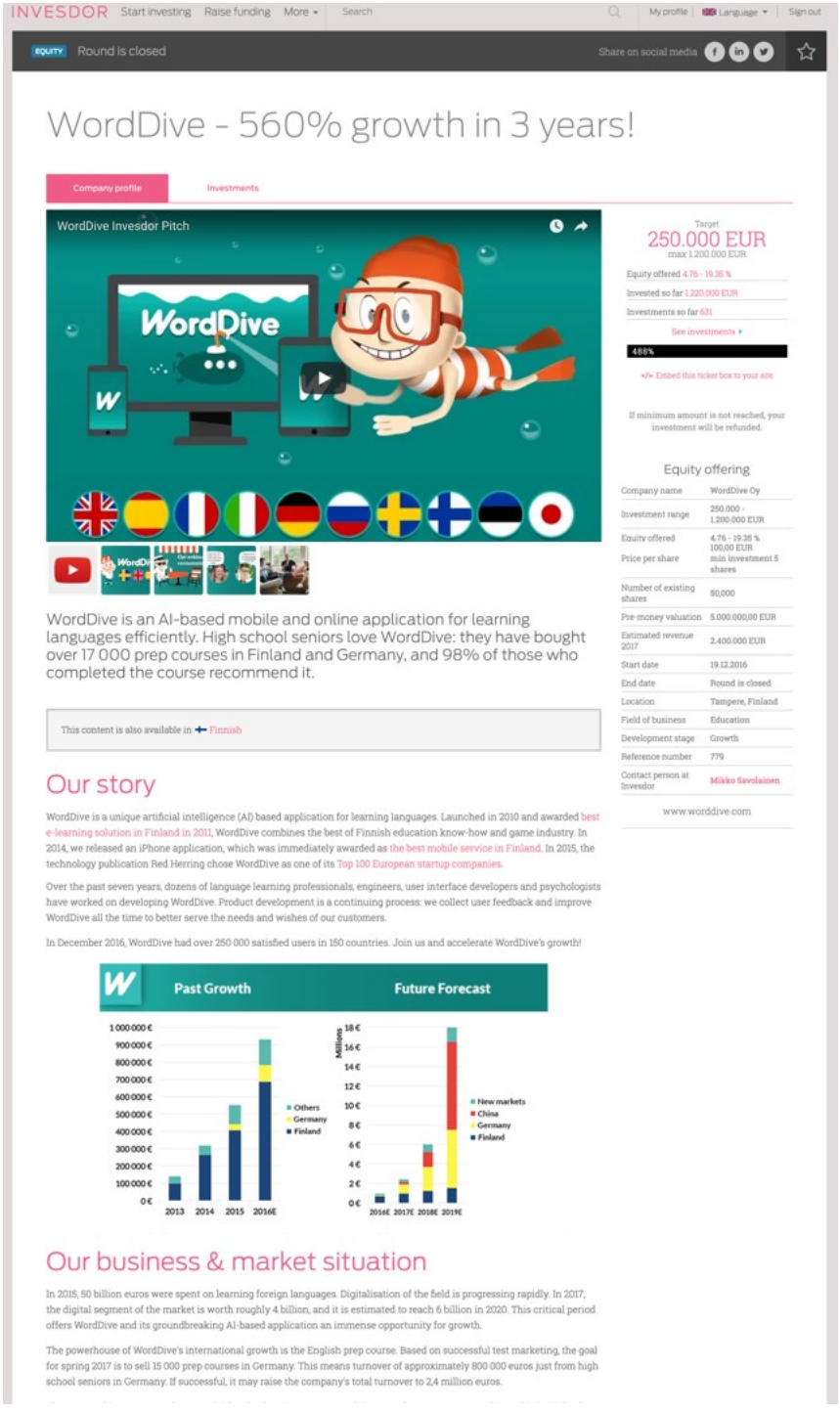
Appendix A: Example campaign

Example crowdfunding campaign on Invesdor

This figure depicts a cut version of an Invesdor campaign (Invesdor, 2017), which includes a video, a growth graph, and team pictures and LinkedIn links. The general layout is standardized in all campaigns.



Our team

WordDive's 12-person core team in Tampere consists of digital marketing, pedagogy and mobile-oriented product development professionals. Besides our core team, we have a part-time network of 20 native speaker teachers and other language professionals producing quality study material in ten languages.

Supporting the growth and development of the company are three successful business angels, a board of four members focused on international business, and rock star and The Voice of Germany coach Samu Haber, who learned German with WordDive.

Timo-Pekka Leinonen

Founder, CEO

Learning foreign languages was very difficult for Timo-Pekka. Regardless, he wanted to learn Japanese, and so WordDive was born. Together with his language teacher mother, he developed a prototype that enabled him to learn so much Japanese that he ended up working in Yokosuka and Tokyo in 1998–2000. Besides Japan, Timo-Pekka has lived and worked in Germany and the United States.

https://fi.linkedin.com/in/nfinland

Nicolas Fogelholm

Digital Marketing

Nico is a successful entrepreneur and online marketing veteran who has been doing and managing digital marketing for 18 years. Apart from hands-on experience of search engine optimisation and marketing, Nico has a great deal of experience of developing online services and managing customer experience. At present, Nico is the Senior Advisor of Tulos, the digital marketing company he founded.

https://fi.linkedin.com/in/nfinland

Uses of funds

The funds to be raised will be used for marketing with the goal of accelerating turnover growth. The first 500 000 euros will be used to market the prep course in Germany. Test marketing in spring 2016 lead rapidly into 1 400 prep course purchases in

Valuation

WordDive is a fully scalable service operating on the growing four-billion-dollar digital language learning market. WordDive is growing at a significantly faster rate than the market and getting excellent customer feedback.

Risks

Unlisted growth companies are high-risk investments. Making a high-risk investment involves risks, for example the risk of losing your investment, lack of liquidity, irregular or rare dividends and dilution of your stake. Please study this risk warning before making a high-risk investment.

It is recommended that you familiarize yourself with the investment target of your choice, reduce risks by investing in several investment targets and balance your investment portfolio with more liquid investments. We also advise you to pay attention to the Target Company specific risk descriptions, which you will find included in the pitch materials.

Attached to the pitch there is a creditworthiness report that may be relevant for the investment decision

Information on the issue terms

- The price of issue of the share in its entirety will be marked on the invested unrestricted equity fund.
- The company has a product development loan of 163 000 euros from Tekes - The Finnish Funding Agency for Innovation.

Financials

Accounting period 1.1. – 31.12. Financial figures for the year 2016 in this document are based on an estimate made 12.12.2016. In addition to the audited balance sheet book from 2015, an unaudited profit and loss statement and an unaudited balance sheet from 1.1.2016 to 30.11.2016 are included in the attachments.

	2015	2016	2017	2018	2019
Revenue	552.000 EUR	930.000 EUR	2.400.000 EUR	6.000.000 EUR	18.000.000 EUR
Revenue growth %		68.5%	158.1%	150.0%	200.0%
Operational costs	665.000 EUR	1.175.000 EUR	2.649.000 EUR	5.280.000 EUR	13.400.000 EUR
EBITDA	-113.000 EUR	-245.000 EUR	-249.000 EUR	720.000 EUR	4.600.000 EUR
EBITDA %	-20.5%	-26.3%	-10.4%	12.0%	25.6%

Forecasted CAGR (forward 4 years)	138.96%

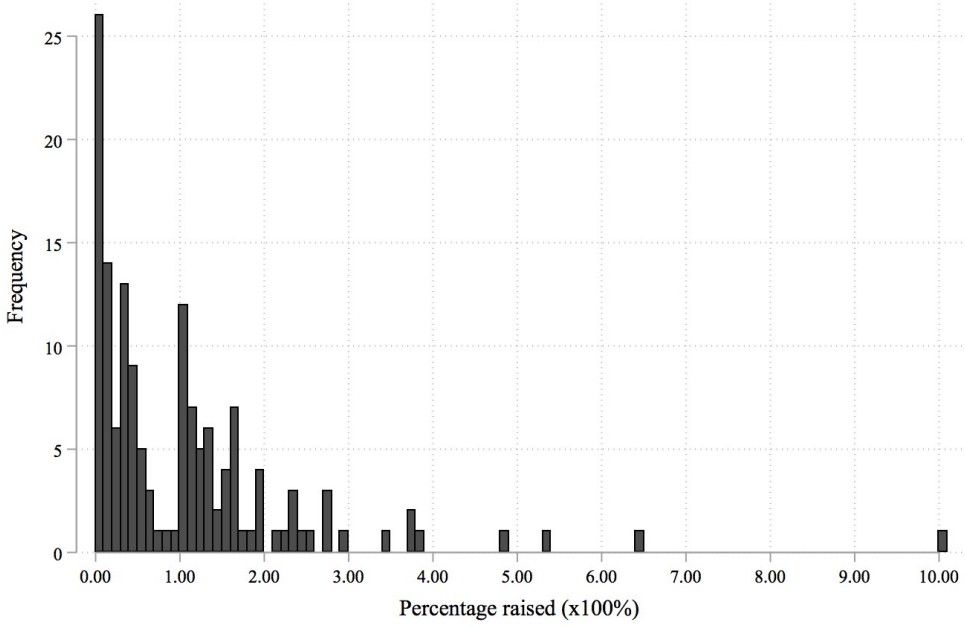
Documents

Trade register extract	47.9 KB
Articles of association	350 KB

Appendix B: Graphs

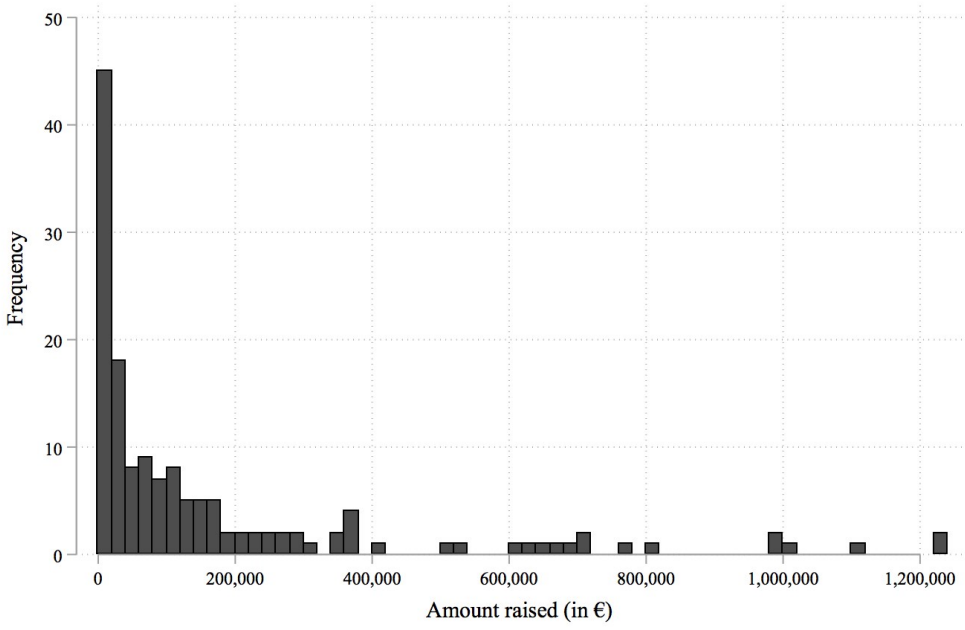
Histogram of Percentage raised

This figure presents the distribution of the percentage raised by the campaigns in the sample. The sample ranges from 2012 to May 2017, covering 147 equity crowdfunding campaigns. See Table 1 for variable definitions.



Histogram of Amount raised

This figure presents the distribution of the amount raised by the campaigns in the sample. The sample ranges from 2012 to May 2017, covering 147 equity crowdfunding campaigns. See Table 1 for variable definitions.



Histogram of Number of investments

This figure presents the distribution of the number of investments in the campaigns in the sample. The sample ranges from 2012 to May 2017, covering 147 equity crowdfunding campaigns. See Table 1 for variable definitions.